CONSUMER INFORMATION NEEDS
TO SUPPORT
MONITORING AND POLICY ASSESSMENT FUNCTIONS

The Ad Hoc Information Committee

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EXECUTIVE SUMMARY

This paper presents an overview of California Energy Commission (Energy Commission) consumer data needs. It is written to provide a comprehensive framework of consumer data collection issues, and to facilitate understanding of the collection, processing, and submission of end-use customer data by various energy market participants to the Energy Commission. The Energy Commission is examining its consumer data collection and submission requirements as one phase of an Order Initiating Rulemaking (OIR), and may increase or decrease requirements on various categories of industry participants. Existing requirements are placed primarily on electric and natural gas utilities, but the changes that have already been made in electric industry structure, and that may be made in natural gas industry structure, necessitate a review of and possible adjustment to Energy Commission data collection regulations.

The Energy Commission's consumer data needs fall into four categories: (1) electric and natural gas usage, (2) retail customer characteristics, (3) market characteristics, and (4) projections of key variables. This paper provides a review of each of these four types of information, and discusses for each type what regulatory requirements exist. With this background, the paper discusses possible sources for these types of data and information, including: (1) universal mandated collection, (2) collection via surveys (by the Energy Commission itself or by others as a result of Energy Commission mandates), and (3) cooperative arrangements between Energy Commission and other entities to obtain data. A variety of known issues are also discussed.

In order to motivate resolution of these issues, this paper provides a preliminary set of Energy Commission Staff recommendations. These recommendations stem from Staff's current understanding of the issues and the feasible alternatives. Staff proposes that: (1) basic electric and natural gas usage data should be provided by the entity providing the "energy retailing" services to end-use consumers, (2) electric self-generation or natural gas self-production/consumption data should be provided by end-use customers engaging in these activities, (3) hourly electric load data should be provided by the utility distribution company, and (4) structural and behavioral characteristics should be collected directly by the Energy Commission and/or other agencies interested in these data. Numerous details remain to be resolved about the specific implementation of these general recommendations.

A series of workshops have been scheduled by the Ad Hoc Information Committee to review the scope of Energy Commission consumer needs and the alternatives for satisfying these needs. Three subsidiary "phases" of the OIR have been identified that are relevant for consumer information: (1) system data encompassing hourly electric load data, (2) consumption data encompassing usage and revenue data classified by economic activity and geographic region, and (3) structural and behavioral characteristics data. While this paper provides an overview to set the stage for each of these groups, specific

papers will be prepared to facilitate in-depth discussions of specific data or specific issues that have been identified. The result of these in-depth workshops will be a series of proposed data collection and reporting requirements that will replace the current requirements included within the California Administrative Code, Title 20, Article 2, Sections 1301 - 1349.

I. INTRODUCTION

This paper is written to facilitate discussion of the collection, processing, and submission of end-use customer data by various energy market participants to the California Energy Commission (Energy Commission) pursuant to its regulatory requirements.

A. Background

In May and June 1997 the Energy Commission initiated an Order Instituting Rulemaking and an Order Instituting an Informational Proceeding, respectively, to address how changes should be made to the Energy Commission's data collection regulations. An Ad Hoc Information Committee (Committee, Commissioner Moore presiding and Vice-Chair Rohy) was established to guide these combined proceedings. A round of preliminary workshops were conducted during latter 1997 to address confidentiality concerns and proposed changes to data submissions. This process resulted in major actions.

First, the Energy Commission submitted revised confidentiality regulations to the Office of Administrative Law (OAL). Changes were made to create several categories of data that are automatically designated as confidential, rather than requiring a submitter to simultaneously submit data and petition for its classification as confidential. These changes strengthened protections governing release of aggregations of confidential data to ensure individual energy user privacy is preserved. These regulations were approved and took effect in August 1998.

Second, in June 1998 the Ad Hoc Information Committee issued a report resolving issues about Energy Commission authority to collect data and reaffirming its intent to collect data from the energy industries to support two major functions implicit in the Warren-Alquist Act -- monitoring energy industries, and developing policy recommendations for the Governor and legislature. In addition, this report established several principles that the Committee proposed to use in guiding its actual rulemaking activities for the remainder of the OIR[1] The Energy Commission adopted the key findings and principles of the Committee's June 12 report at the June 24, 1998 business meeting with minor modifications.[2]

In late June 1998 the Committee issued a second report proposing a scope and schedule for the remainder of the OIR proceeding. As a result of a workshop held July 9, 1998, the Committee issued a final version of this Scoping Report. On July 30, 1998, a Scoping Order was issued that responded to several issues raised in the workshop and announced

[1] Energy Commission, Ad Hoc Information Committee, **Report on the Energy Market Information Proceedings**, Docket 97-DC&CR-1, June 12, 1998.

[2] The Ad Hoc Committee sponsored a minor errata, and the motion sponsoring adoption clarified that least cost data collection approaches should take into account total costs, feasibility, practicality, and data precision.

a schedule of activities encompassing three major categories of data: (1) electric generation, (2) electric system, and (3) consumer characteristics.

B. Purpose for This Paper

This paper is written to facilitate discussion of the consumer characteristics portion of the OIR. The Energy Commission currently collects various kinds of consumer data from utilities, and the advent of electric industry restructuring influences both the nature of the data that the Energy Commission needs as well as the responsibilities of the utilities to provide these data. Similar changes seem to be forthcoming for the natural gas industry.

Electric industry restructuring creates new entities who are authorized to provide energy services to retail customers. This paper will refer to these entities as electric service providers (ESP). The California Public Utilities Commission's (CPUC) implementation of AB 1890 (1996) has established two subsidiary groups of ESPs; registered ESPs are required to demonstrate certain capabilities and to disclose terms and conditions of product offerings as a condition of serving the residential and small commercial customer market, while those ESPs serving only the larger customer market are not obligated to meet these requirements. Both provide comparable services to end-use customers and both are encompassed within the scope of this paper and the Energy Commission's rulemaking.

Previous CPUC actions have permitted natural gas marketers to sell commodity gas to retail customers under different terms and conditions for two broad groups -- core and non-core. Core customers were residential and small commercial customers for which the local distribution utility retains an obligation to serve. Non-core customers were responsible to acquire their own natural gas supplies from marketers, while continuing to use the LDC distribution system. Beginning about 1990, aggregators were permitted to aggregate core customer loads and to market gas to these groups. The CPUC refers to these entities as Core Transport Agents (CTA). This paper will use the term retailer to describe all of these entities (registered and non-registered ESPs, natural gas marketers, and CTAs), because their common service is selling commodity energy to retail end-use customers. One of the responsibilities still assigned to electric and natural gas utilities is this retailing activity as the default provider.

The Committee's June 1998 paper clearly establishes the principle that all entities performing similar functions in the industry should be required to submit comparable information to the Energy Commission. Energy Commission Staff interpret this principle to mean that retailers and utilities should submit comparable information about their sales of energy to end-use customers, e.g. the energy retailing function. That utilities have other functions within the industry that retailers do not provide does not diminish the equivalence of the retailing functions that they do share. The other implication of the Committee's principle is that utilities may continue to be obligated to provide certain

information based on their distribution functions, while retailers will not be required to provide such information, because retailers do not perform these distributions functions.

The principal questions the Committee must now address are:

1. What types of data should each category of entity be required to routinely submit to the Energy Commission?

2. How accurate must this information be?

3. How often should this data be provided?

Staff understands that the Committee wishes to explore these issues in a series of workshops that move from the general to the specific. This will enable the parties to better understand the Energy Commission's needs for information as well as the Committee to understand the issues it must resolve in imposing any mandatory data provision requirements on the electric and natural gas industry participants.

This paper provides Staff's perspectives on the general issues of consumer data collection. Section II describes four broad types of information. Section III reviews various sources for these information items. Section IV discusses some of the issues associated with mandatory requirements for the provision of consumer information to the Energy Commission by industry participants. Section V concludes with a summary of Staff's recommendations concerning the entire category of consumer information.

C. Schedule for Resolution of the Issues/Implementation

As Staff understands the Committee's Scoping Order and final Scoping Report[3], these issues are to be discussed in workshops this fall. An opening workshop is scheduled for September 29, 1998, and more specific workshops on individual topics in October and November. Draft regulations proposing load research and consumer information reporting requirements would be published in February 1999, proceed through the regulatory approval process in the spring and summer 1999, and become effective in late summer 1999. Compliance with any new reporting requirements might start in late 1999. To the extent the Energy Commission itself undertakes certain data collection efforts directly, these would start when budget resources become available. It may be necessary to condition both the shift to Energy Commission responsibility and its timing with the availability of these resources.

[3] Energy Commission, Ad Hoc Information Committee, **Scoping Report Describing Resumption of the Rulemaking**, Docket 97-DC&CR-1, July 28, 1998.

II. TYPES OF CONSUMER INFORMATION

There are a wide range of data that might be identified as consumer information. The discussion of this paper describes both historic and projected information. This paper focuses on historic data that describes three things about consumers: what energy they consumed, what factors appear to have influenced this amount of consumption, and what options consumers were exposed to when they made their choice of provider or levels of consumption. Projection data are described to indicate how current regulations require information to be submitted to the Energy Commission. Table 1 summarizes these four broad categories, types of data within them, and specific variables that the Energy Commission needs for its analyses.

A. Electricity and Natural Gas Usage

Electricity and natural gas usage are broad categories of energy data that includes sales to end-users by commercial companies and regulated utilities in their role as a retailer, self generation of electricity by end-users, and production of natural gas that is self-consumed by the producer or distributed to end-users outside of the utility distribution network. Usage data can generally be described as encompassing consumption, revenues, and number of accounts, classified by economic activity and geographic location.

The Energy Commission's current regulations require electric and natural gas utilities to provide energy usage data, and for a combination of utilities and end-users to provide estimates of self-produced/consumed or privately distributed energy. The Committee's July 25 Scoping Report summarizes these requirements.[4] The Energy Commission last revised these regulations in 1990.

1. <u>Electricity Sales</u>

Electricity sales is the basic element needed to understand activity in the electricity industry. Current Quarterly Fuel and Energy Report (QFER) regulations require utilities to provide various items of data on a quarterly basis that describe electricity consumption on a monthly basis. An important feature of these electricity consumption reports since their inception in 1975 is the classification of end-use customers by economic activity, and reporting of usage data by these categories of customers. Over the years that this requirement has been in place the modern economic activity-based demand forecasting model has developed presuming the availability of actual consumption data at a highly disaggregated level with which to analyze specific industry consumption patterns and to use in benchmarking or calibrating model results.

[4] Ibid, pp. 10-16.

For many years classification of economic activity by government agencies has been controlled by the federal Office of Management and Budget, which issues specific instructions for the Standard Industrial Classification (SIC) Code system. This ensures uniformity in application and facilitates correlations of separate bodies of data collected by different agencies. With the adoption of the North America Free Trade Act (NAFTA), the SIC system will be replaced by the North American Industrial Classification System (NAICS), which combines features of the separate systems now used by the United States, Canada, and Mexico into a unified, consistent system as well as making classification adjustments to reflect evolving industrial activity patterns.

2. Electricity Self Generation

Electricity produced and consumed onsite has become an important element of the electricity industry in California. End-use consumers have chosen this option to reduce the costs of total electricity consumption, and to improve the reliability of electricity supply in some instances. The technologies of self generation range from residential scale rooftop photovoltaic panels to hundred megawatt cogeneration facilities at industrial sites. When combined with electricity sales data an overall picture of electricity consumption can be described.

The current QFER regulations split responsibility for self generation reporting between the owners of these facilities and utilities using a facility capacity size threshold. Most larger facilities, greater than 10 MW capacity, are required to report monthly energy production, fuel use, and generation at the time of utility system peak demand directly to the Energy Commission. The utilities are required to provide a contact list for these above 10 MW facilities each year to the Energy Commission based on their interconnection agreements with owners of parallel generator sets.[5] Utilities are also required to provide an estimate of aggregate self generation production for facilities less than 10 MW based on their knowledge of facilities through interconnection agreements, participants in net metering tariffs, and other sources of information.

[5] California Code of Regulations, Title 20, Section 1304 (b)(11)(c)1.

Table 1: Summary of Consumer Data Requirements

Category/Type of Data	Specific Data Elements	Reporting Frequency
A. Electricity and Natural Gas Usage		
1. electric usage	electricity sales (consumption of kWh, # of accounts, revenue) by SIC code and county	monthly sales reported quarterly
	electricity self generation (production of kWh)	monthly usage reported annually
2. natural gas usage	natural gas deliveries (consumption of kWh, # of accounts, revenue) by SIC code and county	monthly deliveries reported quarterly (private pipelines report annually)
	natural gas self production/consumption (production of therms)	annual production reported annually
B. Retail Customer Characteristics		
1. structural characteristics	premise structural and appliance equipment features; occupant demographics and economics; energy efficiency measures and program participation	biennial reporting
2. electricity load patterns	system hourly loads; customer sector aggregate hourly loads; and end-use or industry hourly loads	monthly typical days reported annually
3. behavioral decision-making	N/A	N/A
C. Market Characteristics		
1. supplier characteristics	functions provided, affiliations, geographic region served, number of customers, annual revenue, related product lines	N/A
2. product offerings	terms, conditions, prices	N/A
3. market penetration of energy efficient measures	measure performance and cost; measure restrictions; current market share; measure penetration in end-use stocks	no specific intervals, as CCIG and other budget sources permit data collection
D. Projection Information		
1. short term electric and gas sales forecasts	forecasts for one year-ahead	quarterly
2. long term electric and	sales, self-generation, detailed	biennial

Category/Type of Data	Specific Data Elements	Reporting Frequency
gas sales forecasts	sectoral and end-use results, key input assumptions, methodology	

3. Natural Gas Sales

Natural gas utilities have reported their sales of natural gas to end-users to the Energy Commission in nearly an identical manner to electricity sales data reported by electric utilities. Since PG&E and SDG&E are two of the largest combined electric/gas utilities in the country, this commonality of reporting requirements was very practical. Since the mid-1980s, gas marketers and CTAs have sold natural gas to end-use customers. Except where these sales have been delivered through a private, non-utility pipeline, however, the utility has been the entity that reports these sales to the Energy Commission. In effect, the utility reports deliveries to the Energy Commission (both its sales and the sales of gas marketers and CTAs).

Further unbundling of the natural gas industry, now initiated by the CPUC through its Natural Gas Restructuring OIR, may further diminish the services which the end-user must obtain solely from the utility. The CPUC appears to support further unbundling of the revenue cycle services to bring the gas marketer's opportunities up to par with those of the electric service provider. Natural gas billing by a competitive gas marketer would reduce the need of the gas utility for customer usage data, economic classifications of the customers, and other applications requiring customer usage data that make utility reporting of gas deliveries to the Energy Commission logical. This would place the natural gas industry in much the same situation as electricity is now, and require a reexamination of the Energy Commission's regulatory requirements which permit the gas marketer to report its sales through the natural gas utility in most instances.

Relatively small volumes of natural gas are now reported by gas marketers directly to the Energy Commission. All of these sales are distributed to the end-use customer through private pipelines, and hence cannot be reported by the gas utility since the gas utility lacks the required information. These sales are, however, reported by SIC code so the gas marketer must understand something of the business activity of its end-use customers.

Natural gas utilities are also required to estimate natural gas consumption of small self-generation facilities corresponding to the electric utility requirement to estimate electricity production. Since these volumes of gas flow through a common meter in most instances, this requirement appears to permit the Energy Commission to better understand the use of natural gas for industrial production processes versus electricity generation.

4. Natural Gas Production and Marketer Sales

Natural gas production and marketer sales roughly parallels electric self generation, in that it accounts for natural gas consumption that is not seen by the utility distribution system. Interstate pipelines selling directly to large users in California also report these sales. The QFER regulations require this element of overall usage permitting the Energy Commission to have a comprehensive picture of natural gas consumption.

B. Retail Customer Characteristics

Retail customer characteristics have become an important prerequisite to modern end-use demand forecasting models because of the structural information that these models require to be able to predict evolving consumption patterns on the basis of appliance saturations, changes in fuel share trends, vintaging characteristics to predict the impacts of building and appliance efficiency standards, etc.

Of course, these customer characteristics are also essential to the market segmentation efforts that have been used in the energy industry for years as the basis for designing and promoting demand side management (DSM) programs. Now they have value in the more traditional marketing that goes on wherever competing commercial firms attempt to gain the allegiance of customers through advertising and promotional campaigns.

The Energy Commission has required both electric and natural gas utilities through its Common Forecasting Methodology (CFM) regulations, Section 1344 to acquire customer characteristics data through end-use customer surveys, load research projects, and other customer behavior research, and to provide this data to the Energy Commission. The Energy Commission Staff has used this data extensively in its intermediate and long-term demand forecasting assessments, and to a lesser degree in its efforts to develop DSM measure inventories and to design Energy Commission-operated programs. Utilities have used these data in comparable activities.

1. Structural Characteristics

Structural characteristics are features of the premise and/or production equipment of end-use customers that helps to explain how a customer consumes electricity and natural gas, and sometimes other fuels. In effect, these “how” data explain the “what” data represented by the individual customer’s energy consumption history.

In the residential sector these data have been acquired predominately by large-scale mail surveys asking customers to self report information such as: date of construction, construction style and size features of the dwelling; appliance holdings and fuel shares; installation of energy efficiency measures and practices; numbers of occupants and other demographics of the household; and limited amounts of household income data. Smaller

scale onsite surveys using trained inspectors have been used to verify the self reporting tendencies of mail surveys and to obtain details that cannot be obtained reliably from self reporting techniques.

In the commercial sector, similar mail surveys have been used although with less success than in the residential sector because of the complexity of many commercial premises. Onsite surveys have been required to a greater extent to collect the more complex engineering details of HVAC systems and other energy using equipment that may not be self evident to building occupants.

In both residential and commercial building settings, one goal has been to obtain sufficient details of the buildings shell, major equipment and loading and occupancy pattern to be able to utilize a heat load simulation model to estimate the HVAC portion of energy consumption. Once simulations have been obtained that match real world consumption data, then the ability of the heat load model to provide an explanation of the end-uses and to predict consequences of retrofit energy efficiency measures has been invaluable for demand forecasting and DSM program impact assessments.

Finally, in the industrial sector, the self reporting paradigm has been discovered to be inapplicable. Most industrial facilities are so complex that it is unrealistic to expect the end-use customer to complete inventories of equipment holdings and to process the other information needed to understand how the facility consumes energy. Typically, onsite visits by engineers trained to look for key production process details and other explanatory features have been successful in developing a reasonable profile of the factors that explain industrial facility consumption histories. Further, some industrial facilities have been understood to simply be too complex for any cost-effective visit, i.e. oil refineries, chemical plants, glass production facilities, etc. Only the so-called assembly industries in which a production operation occurs within a building and shifts of assembly workers screw, bolt and solder equipment together into final products have been found amenable to the survey technique. For the extraction and process industries, more laborious simulation efforts have been required that draw upon knowledge of the basic production processes used in each industry (and sometimes subindustries) combined with engineering characterizations of how these processes utilize energy.

Current Energy Commission regulations require both electric and natural gas utilities to conduct residential and commercial sector end-use customer surveys every two years, and assembly industry customer surveys every four years. The results of the survey and respondent consumption histories have been provided to the Energy Commission Staff electronically for their analysis and use. Smaller utilities have had lesser requirements.

2. Electricity Load Patterns

In parallel to the customer characteristics data described above, it is necessary for modeling of the electricity industry to have data that describes the hourly patterns of how customers use electricity. In the earlier integrated resource planning era, sometimes peak demand was sufficient to model how hourly variations in usage over a year translated themselves in the highest demand from connected load on the utility system. This peak demand, however, was predicted using end-use load forecasting models that built up hourly loads for the system from many small segments: (1) end-use loads of the major customer sectors, and (2) individual industry loads for minor industries. The necessary load shape data were acquired by utilities for forecasting, DSM program evaluation, distribution system planning, and rate design purposes.

Load research units operated with unwieldy data recorders and translators to attempt to acquire and process what were then huge volumes of data using techniques and equipment that was troublesome at best. Sometimes an entire year was needed to acquire, process, and cleanup data until reasonable customer sector load estimates could be developed. Where utilities did not provide all the load shapes required by the modeling needs of the Energy Commission Staff, supplemental sources were pursued or engineering estimates substituted. The Energy Commission has not acquired load research data independent of the utilities due to the great cost of this activity, both in terms of direct costs for data acquisition as well as considerable personnel costs to process the raw data into useful products.

In the new industry structure, however, with each hour of the year a separate and distinct market, the need for hourly characterizations of customer load have become paramount. Customer sector load profiles that are collected, processed, weighted and posted for public use with as little as a few day's lag time have supplanted what was once a load research unit effort that took an entire year. In addition, the applications using this data have speeded up tremendously. A succession of hourly load profiles are required for billing direct access customers, and these must be ready for use no later than five days after the final day of consumption. Load profiles used as an aide to bidding load into the PX or scheduling load into the ISO are required on an even more rapid turnaround basis. Utilities must also use load profiles to develop Power Exchange average prices for each customer class as part of the disaggregated billing requirements for all customers, whether bundled service or direct access.

The Energy Commission requires utilities to submit three items of information: (1) hourly system loads, (2) hourly customer sector loads for typical days in each month, and (3) end-use loads for the residential and commercial building sector air conditioning end-uses. Each of these data have been submitted annually in a single filing. Only a portion of these data have been required by the Energy Commission alone; the hourly customer class aggregate loads have been required by the CPUC for many years for rate design purposes,

but using aggregates that are defined by rate groups. The major utilities have complied with Energy Commission requirements by slightly enlarging the sample sizes of the major customer sector populations, and then reweighting the data to make it representative of economically defined sectors rather than tariff-defined rate groups.

3. Behavioral Decision-Making

Behavioral decision-making data facilitates understanding why customers made the decisions that they made. This is one part of the last of three broad questions of What? How? and Why? (The other part of this Why? question deals with the actual choices that the customer had to select from, which therefore focuses on the product offerings of competitive suppliers. The prices and other terms and conditions of these product offerings provide the menu from which the customer selected.) There is no comprehensive listing of behavioral decision-making data that is needed because of the relatively primitive state of long term, analytic models at this time. Consumer attraction for "non-economic" features of some options, discounting of information as untrustworthy, financial constraints that restrict implementation of economically rationale options, satisficing behaviors rather than optimizing behaviors, preoccupation with revenue enhancements rather than cost savings are all factors that could be considered part of behavioral decision-making. The absence of a sufficiently compelling paradigm to address consumer decision-making in quantitative modeling obviates any ability to enumerate a "core" list of behavioral data that must be collected.

Customer behavior data can only be acquired by complex research studies involving intensive interviews with customers. These approaches have largely been pioneered in other industries where the competitive paradigm has been the order of the day for many years. Focus groups, analysis of rebate offers, direct one-on-one interviews, and other techniques have been used to acquire the information to understand how customer choice could be influenced to maximize net revenues.

The Energy Commission has not traditionally required customer behavior data from utilities. largely because the Energy Commission's own quantitative modeling work has not stabilized around a "core" set of variables. Some utilities have used the flexibility built into the Title 20, Section 1344 Utility Data Plan requirements to select and submit customer behavior research projects in lieu of other requirements, but these have been relatively rare. Greater emphasis on assessing customer behavior has existed in the program evaluation requirements of the CPUC for DSM programs. Each of the four major utilities has linked these program-specific evaluations to its demand forecasting activities in different ways and to different degrees. Research efforts that were underway to bridge this forecasting vs. program evaluation gap have diminished severely as a consequence of industry restructuring and competitive positioning efforts.

The ability to ask and the necessity to answer "why" questions has increased with the restructuring of the electricity industry and its emphasis on customer choice. When the customer has more choices, then a wide range of research and public policy questions become important that were not even legitimate research questions prior to restructuring. Examples include: how will customers respond to hourly electric pricing once the price freeze is lifted? Are customers willing to respond to, or program appliances to automatically respond to, real time price signals as a system reliability measure? What proportion of customers is willing to spend more for electricity in order to achieve environmental benefits? Without customer behavior data these questions cannot be resolved accurately.

C. Market Characteristics

Market characteristics are an entirely new category of data that has only become effective with the restructured electricity industry and its paradigm of competitive suppliers and customer choice. Suppliers have various attributes of size, corporate ownership, affiliation with regulated utilities based in California or elsewhere, etc. These suppliers offer various products in the market, such as renewable electric power, electricity and natural gas, electricity with various metering and billing options, pricing arrangements with degrees of firmness relative to the hourly Power Exchange benchmark, etc. DSM measures continue to make sense for a variety of reasons and will continue to be marketed, even if the traditional utility DSM programs offered by California utilities are disappearing. Efforts to transform markets rather than efforts to subsidize behaviors not supported by market conditions are growing in importance, and clearly such efforts require adoption of market research activities as a complement to the concept of market segmentation and targeted market transformation.

1. Supplier Characteristics

Supplier characteristics range from the simple enumeration of suppliers as is currently posted on the CPUC's website of registered ESPs to a more in-depth assessments of the strategies of retailers as units of large international firms operating in various segments of the energy industry wherever markets are open to competitive players.

There are a variety of industry roles that each have their own unique roster of participants. These include ESPs, gas marketers, scheduling coordinators, meter data management agents, meter service providers, billing agents, etc. At this time the Energy Commission Staff sees no reason that the sort of supplier characteristics data that it may need cannot be obtained from public or other market sources; therefore, the Energy Commission Staff foresees no regulatory requirements for supplier characteristics.

2. Product Offerings

Characterizing the electricity industry in California in terms of product offerings is a major change as a result of restructuring. The former monopoly utility, bundled service paradigm simply did not lend itself to a vocabulary of products and offerings. Clearly major changes have been initiated that are evolving rapidly. Even at these early stages, however, there are major dimensions in which suppliers are differentiating their product(s) from those of other suppliers. These include: (1) renewable power supplies, (2) firmness/risk of energy commodity price, and (3) metering, billing, and other information services.

Knowledge of product offerings is becoming an important feature of the new industry structure. A major emphasis of the restructuring is on consumer choice, and these choices are not merely restricted to suppliers, rather suppliers are differentiating themselves from others by offering products that differ in ways that suppliers hope will be persuasive to consumers. Knowledge of the penetration of these various product offerings within the market are important clues to the value added with which the restructured electricity market must be assessed. Placing the totality of the benefits into a framework of cost reduction compared to traditional utility prices/cost would seriously short change the higher value that an unbundled, product differentiated electricity industry can rightfully claim is a benefit of restructuring. In order to accomplish these assessments, however, product offering and penetration data must be obtained.

For registered ESPs, the CPUC requires product prices and other terms and conditions to be posted in advance, pursuant to the requirements in PUC Section 394.5 (SB 477, 1997). For other ESPs serving the larger commercial and industrial customers, however, there are no data available on product offerings. For very large customers, corporate chains, and other customers with market power, negotiated prices and terms and conditions will be closely guarded competitive information that neither the supplier or the consumer wants to have publicized. The only means to complete this picture is to conduct consumer research.

In addition, no recognized data collection systems exist to describe the penetration of various product offerings into the market or various submarkets. Considerable confusion has existed regarding how many customers have elected to participate in direct access. A recent California Energy Markets article (CEM, July 31, 1998) revealed the enormous overstatement of participation that had been widely cited using Direct Access Service Requests (DASR). This use of DASRs grossly overstated the actual number of customers by counting the customer twice if more than a single DASR was needed to process its request properly, and by omitting any adjustments for the fact that the larger customers now participating in direct access frequently have more than one meter or one account. Thus, explicit customer research will be required to obtain a representative

understanding of the prices and terms and conditions of participants in the new electricity market.

One requirement the Energy Commission may wish to impose on the UDCs and retailers reporting to it is the segmentation of electricity sales by product offering and explicit linkage to a posted product price and other terms and conditions of service. This explicit attribution of energy sales to a specific product will be required to understand fully the benefits that consumers are deriving from the restructured market.

3. Market Penetration of Energy Efficient Measures

The Energy Commission, either alone or in conjunction with traditional industry participants and associations California Conservation Inventory Group (CCIG) and California Demandside Measure Advisory Committee (CADMAC) have collected various data to describe the penetration of energy efficiency measures within various market segments. Examples of these data include: (1) share of new residential housing constructed according to various performance standards or prescriptive packages, (2) share of specific appliances in efficiency ranges, (3) sales of retrofit insulation materials for existing housing, (4) sales of weatherproofing materials, etc. No uniform or comprehensive sources for this data exist, so its acquisition is costly and time consuming.

These data are invaluable for assessing remaining energy efficiency potential, understanding the degree to which the market itself is adopting energy efficient technologies, and creating a benchmark from which to assess the net impacts of DSM programs.

The Energy Commission has had two applications for in-depth DSM measure data. First, the Energy Commission's CFM process required utilities (and the Energy Commission Staff) to included within long run demand forecasts all conservation "reasonably expected to occur." This requirement imposed various DSM analysis requirements on Electricity Report participants over the years, but necessarily required some use of DSM measure data.[6] Utilities have undertaken similar DSM analyses for the demand forecasts included within the California Gas Report.[7] Second, the Energy Commission has a statutory requirement to develop a conservation potential inventory.[8] For several years a technical advisory group existed to facilitate common development

[6] Common Forecasting Methodology requirements for each Electricity Report (ER) cycle were developed by the ER Committee and adopted by the Commission in advance of the filings each ER cycle. The specific requirements to include and document DSM savings changed from cycle to cycle. In the ER 92 and ER 94 periods, explicit DSM reports were required.

[7] The **California Gas Report** is prepared by the gas utilities and other major gas users pursuant to CPUC order and Energy Commission regulations. Satisfaction of Energy Commission CFM requirements impose a DSM assessment requirement, and therefore the need for DSM measure penetration and performance data.

[8] PRC 25401.2.

and use of this inventory. In the early 1990s this effort achieved greater funding and higher level of activity through the CCIG research efforts.

Despite these two applications for DSM measure data, the Energy Commission does not have any energy efficient measure data requirements in its regulations. The Energy Commission Staff have worked with industry participants to acquire these data, frequently through working groups such as CCIG and CADMAC. The Energy Commission has periodically funded data acquisition efforts, but more from a research perspective than a "production" perspective since the Energy Commission does not presently have a sufficient budget to mount the necessary effort on an ongoing basis. CCIG and CADMAC had research budgets, but these have been defended as a consequence of the formation of California Board for Energy Efficiency (CBEE) and the shift of responsibility for energy efficiency policy and planning to this independent advisory board to the CPUC from the responsibilities once assigned to utilities. It is unclear how the research activities once funded by CCIG and CADMAC will be continued under this new institutional framework. At the present time, the Energy Commission Staff are engaged in discussions with CBEE representatives about project funding, including DSM measure data.

D. Projections Needed to Prepare Energy Demand Forecasts

One of the activities for which consumer data is needed is development of intermediate- and long-term demand forecasts, such as the effort recently prepared for and used in the PUC Section 350 by the Independent System Operator, the Energy Commission, and other entities.[9] These activities require projections of variables that serve as inputs into the energy demand forecasting models used by the Energy Commission Staff to prepare electricity and natural gas demand forecasts. Another category of projections are the energy demand forecasts prepared by others. This subsection will briefly identify both.

1. Energy Commission Staff Demand Forecast Projection Requirements

The Energy Commission Staff uses three broad categories of projections in preparing its energy demand forecasts. These are acquired in a variety of ways, and specialized subsets of variables are needed for each of the major economic sector models.

Economic/Demographic Projections. A wide range of economic and demographic variables are used by Energy Commission Staff as inputs into the energy demand forecasting models employed by Staff. These have been developed in-house or purchased by Energy Commission Staff.

[9] Energy Commission Staff, **1998 Baseline Energy Outlook**, Energy Commission Pub. No. P300-98-012, August 1998.

Energy Price Projections. Energy price projections are an input into the majority of the demand forecasting models used by Energy Commission Staff. Economic theory suggests consumers are somewhat responsive to prices, so periodic assessments refine the role of price projections within the various models. These price projections are generally developed in-house.

Energy Efficiency Technology Characteristics. Energy efficiency technology characteristics and efficiency program savings impacts play a role in developing energy demand forecasts. Aggregate program savings developed through external quantification techniques are sometimes used in preparing overall energy demand forecasts. Cost and performance attributes of energy efficiency measures have most recently been developed in-house as minor extensions of historic costs and performance.

2. Utility Demand Forecasts Prepared Pursuant to WAA Requirements

There are two categories of energy demand forecasts prepared by industry participants that have been required as a direct result of reporting requirements articulated in the Warren-Alquist Act itself. These utility demand forecasts were reviewed by the ER Committee in comparison to staff's forecasts, with either one or the other, or sometimes a blended combination used as the basis for supply planning decisions. Utility demand forecasts were not used directly in developing Staff's own demand forecasts.

QFER Forecasts. PRC Section 25310 requires QFER respondents, almost entirely utilities, to provide a one-year projection when these parties submit their historic consumption data pursuant to QFER regulations. Such projections were apparently envisioned as a useful input into short term industry monitoring, but have played no important role in many years.

CFM Forecasts. PRC Sections 25300 - 25301 require electric and natural gas utilities to provide long-term demand forecasts prepared according to the requirements of the "common forecasting methodology" devised by the Energy Commission. The electricity demand forecasts provided by utilities were an integral part of the Electricity Report and were reviewed by Electricity Report Committees in parallel with Energy Commission Staff's own demand forecast submittals.

California Gas Report. The natural gas demand forecasts prepared by natural gas utilities within the California Gas Report process satisfy Energy Commission natural gas demand forecast filing requirements. Like the electric utility demand forecasts, these forecasts do not directly influence Staff's own demand forecasts.

III. SOURCES OF CONSUMER INFORMATION

There are three broad sources for the consumer information described above: (1) universal collection and submission to the Energy Commission by industry participants, (2) statistical estimation of variables using surveys of end-use consumers, and (3) cooperative arrangements with other agencies/industry participants. This section will briefly outline each one and identify most appropriate applications.

A. Universal Collection and Submission

A universal system implies that there are certain data elements that are essential for all customers, and that these data will be collected and maintained for the entire customer population. Clearly a universal system most commonly occurs as a consequence to a regulatory mandate, although specific variables might be so ubiquitous as to be universal. The current QFER system is an example of a universal data collection and reporting system. QFER requires utilities to classify customers by economic activity code, (e.g. SIC Code) and each quarter the utility must run software against its customer master file to "extract" information about its customers' usage of energy (consumption, revenues, and number of accounts) aggregated by SIC code and geographic locale. This information is then provided to the Energy Commission in hardcopy and/or electronic media. In effect, the Energy Commission uses its statutorily-based regulatory authority to compel the utility to perform certain tasks and to report information to the Energy Commission.

While theoretically the entire suite of customer structural characteristics could be included in the mandated set of universal variables, the cost of acquiring and maintaining such broad sets of data variables would be extremely high and the Energy Commission has never suggested such requirements. Therefore, accounting system-based data reporting is limited to the typical data variables commonly associated with the energy business transaction -- usage, billed revenue, utility tariff, location code, SIC code, etc. Typically these would be described as the "what happened" aspects of consumer information as opposed to the "what factors" or "what options" aspects discussed at the start of Section II.

1. <u>Accounting Systems Extracts</u>

Accounting system extracts is a term to describe a process that requires an entity to use its customer master file, its billing system, or other customer account-based databases as the source for information that is reported to the Energy Commission. This database is presumably a combination of data variables that the entity already included for its own business reasons as well as other variables that it has been required to obtain about its customers. Once such a customer database is created, and the software is developed to perform the manipulations needed to generate the reports required, then compliance simply means running these software against the current database and providing the

results to the Energy Commission. In effect, the Energy Commission's information requirements are "extracted" from the customer accounting system once each quarter.

The recent revision to Energy Commission confidentiality regulations makes this form of data confidential whenever certain aggregation thresholds are encountered.[10] The 3/60 rule requires that each cell include at least three customers and no single customer can be greater than 60 percent of the aggregate consumption of the cell. Failure to meet this rule means that the data classified within that cell must be collapsed into another cell foe reporting purposes.

2. Customer Database Dumps

Customer database dumps are as elegant as the name implies -- the entire customer population (for all relevant data variables) is simply dumped out of the system onto an electronic storage media and the results forwarded to the Energy Commission. In contrast to the accounting system extract approach, this technique minimizes the need for the retailer to create and maintain the software which processes the individual customer data into aggregates based on common economic and other classification codes. Requirements for data variables appropriate to each individual customer may, or may not, be imposed. The entire customer database (for the variables provided) is provided to the Energy Commission. The Energy Commission Staff must perform all of the database manipulations necessary to achieve the reports desired.

The recent revisions to the Energy Commission confidentiality regulations makes this form of data entirely confidential on customer privacy criteria. Only aggregations of the data performed by the Energy Commission Staff that would meet the 3/60 requirements could be released.

B. Statistical Estimation Using Survey Data Collection

Surveys are a common tool used to estimate characteristics of a population. Political sentiments collected via surveys are reported almost daily in the newspapers and television news programs. Surveys entail: (1) developing a sampling frame by which the population of interest is described, (2) selecting a sample, (3) gathering the information from the sample, (4) replacing members of the sample as required to ensure representative results, (5) processing the results for validity, (6) weighting the respondent results as needed to develop representative estimates of the population statistic of interest, and (7) computing variance statistics to describe the confidence that should be placed in the results.

[10] California Code of Regulations, Title 20, Section 2505(a)(5) and 2507(d)(1).

Surveys can be used to collect all of the various types of information that were discussed in Section II of this paper, although experience with energy information collected via surveys reveals numerous problems with various categories of data items. Nuances of the survey method -- self reported versus onsite collection by a trained expert -- can be crucial to the success of this technique. (For an overview of the survey technique and an illustration of its use in developing residential customer characteristics, see a forthcoming Energy Commission Staff paper).[11]

1. Applicability of Survey Techniques to Various Data Items

Surveys are well understood to be good vehicles for eliciting proportion and ratio information from a population. They have served this role well in providing residential and commercial building sector data on penetration of appliances and end-uses, fuel share for appliances, etc. Self-response surveys tend not to be good vehicles for technical information for which the potential respondent must perform measurements, look up records, and answer questions requiring in-depth knowledge. They are also very poor means for discovering the actual count of variables of interest across an entire population. Sometimes surveys must be used because there are no alternatives which are feasible, even though the results they provide may be of marginal quality.

2. Implications for Surveys to Collect Retail Consumption Data

Two key questions have already been articulated in this proceeding, but bear repeating because the answers are not yet universally understood. First, can surveys provide a substitute for universal collection of actual energy usage data? Second, what are the cost implications of using surveys as a substitute for universal mandates?

Surveys are Low Quality Substitutes for Universal Collection. Surveys could be used to collect universally known variables such as energy usage. To do so would require respondents to estimate consumption, spend time examining their records, or allowing access to their provider's records. Experience with surveys in California over the past 20 years clearly indicates that consumers have poor understanding of their energy consumption and do not have readily accessible records of it. Staff believes that the quality of response would be poor resulting in a degradation of overall data quality compared to the universal reporting approaches. One application that would be jeopardized is determination of electricity or natural gas consumption growth from one time period to the next. We are concerned that one could not discern this essential statistic for our monitoring function with acceptable accuracy. For example, answering the question of "What percentage growth in electricity consumption occurred for the industrial sector between 1997 and 1998?" requires good estimates of actual consumption in both years for this sector of consumers.

[11] Lang, Judith, **Basic Steps in Conducting Surveys**, Energy Commission mimeo, September 10, 1998).

Surveying Would Increase Costs of Acquiring Consumption Data. The current level of disaggregation for electric or natural gas consumption data is approximately 490 SIC categories by 58 counties. This implies about 28,500 separate domains which would need to be sampled individually, since each "cell" is independent of another. In many instances the population within the cell is smaller than the typical value presumed to be needed for a statistically representative sample, implying that the entire universe within that cell would have to be known in order to draw a sample. Thus collecting consumption data via surveys implicitly requires knowledge of a large portion of the universe of customers. Handling this much data, selecting samples for the discrete survey efforts, operating the surveys, encoding the results from survey forms into electronic media, and processing the data to develop population estimates would be extremely expensive. It would require dozens of staff. Currently the Energy Commission uses about two person years to acquire all QFER data, so the implication is an enormous increase in numbers of staff to implement this alternative means of acquiring consumption data.

Conclusion. Staff believes that surveys are a poor means to collect information that is already universally known with accuracy. Rather than devote increased time and resources to develop estimates, it is far cheaper and more accurate to simply obtain the known information that already exists in an organized fashion in retailer's billing or customer data systems. In the case of energy consumption data, ESPs, CTAs, UDCs, and natural gas utilities possess electricity and natural gas consumption data and can readily provide actual usage to the Energy Commission using either of the techniques described in Section III.A.

3. Sampling Frame Problems for the Survey Process Under Competitive Retailing

Surveys will be increasingly difficult and expensive to conduct in the future because the development of a sampling frame will become much more complex when there is no single source of a population from which the sample can be drawn. Even if UDCs retain knowledge of the name and address of the customer at each service delivery point, they may not know the energy consumption. Survey designs commonly use consumption data to stratify customers to improve the efficiency, or reduce costs, of surveys. The shift from the single source of population counts in the regulated utility industry structure to numerous retailers each possessing their own subpopulations in the new industry structure will impose considerable burdens on the survey researcher. Options include: (1) ignoring the subpopulation data altogether in drawing a sample, (2) drawing samples from some subpopulations hoping that those excluded are similar to those included, and (3) acquiring and integrating all subpopulations to form the population for purposes of sample selection and weighting of respondents. All of these impose either higher costs or lower quality than would have been the case under the former industry structure with its single monopoly provider for a given geographic region.

C. Cooperative Arrangements with Other Agencies

In addition to the "pure" methods described above, there are several "hybrids" that involve other methods. Retailer submission of consumption data classified by economic activity grouping would be easier to accept if the Energy Commission facilitates acquisition of economic classification codes for individual customers. Shifting some or all of current UDC customer characteristics data collected via surveys to the Energy Commission is much more feasible if the Energy Commission has appropriate levels of funding to accept this set of tasks.

1. Economic Activity Classification Using EDD Codes

One of the major concerns ESPs have voiced with universal collection is the requirement that they classify customers by economic activity codes. The Energy Commission has been negotiating a project with the Employment Development Department (EDD) to assess the feasibility and cost of using the EDD SIC code in lieu of UDC or ESP classification of their end-use customers. Should this project be successful, then ESP and UDC costs of compliance with a universal collection system becomes smaller since the major variable not required by business activities is now supplied by the Energy Commission/EDD effort.

2. Coordination/Collaboration with CBEE

The Energy Commission is negotiating with CBEE to secure energy efficiency surcharge funding for end-use customer survey and customer end-use (appliance and process equipment) load research projects that are currently required of utilities by Utility Data Plan regulations (Title 20, Article 2, Section 1344). Energy Commission Staff believes that the data continue to play an important role in the energy planning processes that exist in the restructured industry. They are clearly useful to the Energy Commission for purposes of intermediate- and long-term demand forecasts for electricity and natural gas. They are useful to CBEE in identifying market potential, targeting subpopulations for specific programs, developing control groups for program evaluations, and other analytic activities. These uses are very similar to those conducted by utilities when they planned and operated DSM programs under the monopoly industry structure. The need for both the Energy Commission and CBEE to have highly similar information is the basis for the Energy Commission proposal to CBEE.

If the Energy Commission is successful in acquiring funds, or access to survey data responses to CBEE surveys from CBEE, then UDCs may be relieved of some portion of these requirements and fewer CPUC-regulated ratepayer funds may be necessary.

3. Self-Generation Data via Hybrid Approaches

Self-generation provides an illustration of another hybrid approach -- direct reporting by larger facilities and estimation of values for smaller facilities in the aggregate. To the extent the Energy Commission is successful in acquiring resources to handle large numbers of direct reports and to sponsor surveys to estimate values for smaller facilities, current data collection and reporting burdens can be reduced on industry participants who operate as intermediaries to collect data for Energy Commission use.

IV. ISSUES OF DATA COLLECTION AND SUBMISSION

This section will discuss some of the issues that have already been identified in previous papers or workshop discussions.

A. Industry Function Defines Data Submission Obligations

The Committee's June 12 report includes the principle of equivalent function defines equivalent data submission obligations. Staff believes there are several implications of this principle which must be addressed early in this proceeding.

1. ESP Collection/Submission of Usage Data

Staff understands this principle to mean that retailers (registered ESPs and unregistered ESPs for electric direct access customers, UDCs for the default provider service to bundled service electric customers, gas marketers for non-core gas customers, CTAs performing the retailing function for natural gas core customers, and natural gas utilities for core and core-elect customers) are the entity that should submit usage information about their retail energy customers to the Energy Commission. The retailing function is where the competitive firms provide an equivalent service to that provided by the UDC for their bundled service customers, thus suggesting that all retailers should submit usage information to the Energy Commission.

2. Changed Role of the UDC Compared to the Utility

An implicit assumption of the current Energy Commission regulations is the scope and extent of the role of the utility under the former monopoly industry structure. With the reduced, altered role of the UDC as the successor to the CPUC-regulated monopoly utility, Staff believes it is appropriate to examine the implicit assumptions of the current regulations. Staff believes that UDCs should only be expected to provide data that is compatible with the functions that the UDC plays within the new industry structure.

We believe that there is a net reduction in responsibility from a paradigm of utility obligation to serve to a paradigm of UDC obligation to connect plus the default energy service provider role. This change reduces or eliminates the need for the UDC to collect data that would permit it to make long run demand forecasts as an element of resource planning to satisfy the obligation to serve. Two kinds of data are involved: (1) customer characteristics to support structural modeling of demand, and (2) knowledge of general energy consumption within the service area as an upper bound to potential utility energy sales and peak demand.

Customer Characteristics Data. Over the years the Energy Commission's regulations and its practices have encouraged utilities to collect the customer characteristics data that has proven to be essential to the modern demand forecasting techniques pioneered at the Energy Commission. The original drafting of the Warren-Alquist Act facilitated this evolution by the quite specific wording of PRC Sections 25300 - 25301, both in terms of the specificity of biennial utility filings into the Electricity Report proceeding as well as the authority granted the Energy Commission to define a "common forecasting methodology." The need to organize the process of collection and submission of this data was explicitly recognized by the Energy Commission in the revisions to Energy Commission data collection regulations in 1990 with creation of the Utility Data Plan process [CCR, Title 20, Article 2, Section 1344].

The responsibilities of the UDC do not seem to justify acquisition of the same customer characteristics data once needed by monopoly utilities. Customer sector surveys and end-use load research projects do not have any obvious roles in short-term distribution system planning or in the default energy provider role or bidding bundled service customer load into the Power Exchange's Day Ahead market. The Energy Commission Staff believes that those utilities whose responsibilities have shifted to be a UDC should no longer have to provide these customer characteristics data. For utilities which retain an obligation to serve, however, the Energy Commission Staff believes the current regulations continue to be warranted.

Change in Self-Generation Requirements. Current Energy Commission regulations require utilities to estimate aggregate self generation electrical energy production in their service area for facilities smaller than 10 MW. When utilities had a general obligation to serve and either had to contract for energy supplies or construct generation facilities themselves, knowledge of current self-generation was an important element of determining future penetration of self-generation, which in turn influenced the level of sales that a utility could expect to make versus the total electrical consumption in its service area. On this basis, the Energy Commission mandate for utilities to provide self-generation estimates appears to have been reasonable.

Under the new industry structure, the three UDCs no longer have an obligation to serve, but merely an obligation to connect. They also have a default provider role that implies

the need for some knowledge of customer consumption in order to submit load bids to the Power Exchange. Energy Commission Staff believe that these remaining obligations do not justify a requirement that UDCs provide an estimate of self-generation production/consumption. Staff believes that UDCs do have a continuing need to identify generation facilities inter-connected with the distribution system to ensure UDC employee and customer safety. We believe this implies that UDCs will continue to have organized lists of self-generation facilities, knowledge of the capacity of the generator, and any special information required by CPUC tariff requirements.

Staff believes larger self-generation facilities should continue to be required to provide data directly to the Energy Commission. We believe it may be appropriate to reduce the size threshold to 1 MW as is currently required by the federal Energy Information Administration. Staff believes that self-generation production/consumption estimates for small facilities can be developed using survey techniques using the universe of inter-connected facilities as the basis for developing a sampling strategy and selecting a sample. Thus, the current UDC obligation may be shifted from developing and providing an estimate of self-generation production to one where the UDC provides an periodic update of its database on inter-connected generators to the Energy Commission.[12] This change would place the Energy Commission in the position of determining whether or how frequently the benefits of small self-generation estimates justify the costs of developing these estimates.

B. Known Issues

There are a variety of known issues that have surfaced in previous workshops in response to the Energy Commission Staff paper of October 2, 1997, and in the various workshops that have been conducted to date in this proceeding. There are ten specific issues that will be briefly outlined here.

1. "Burden" of SIC Classification

In their response to previous Energy Commission Staff suggestions that retailers be obligated to provide customer consumption data to the Energy Commission, the issue of SIC coding has been surfaced. Representatives of some ESPs do not perceive that they have a business interest in SIC codes for their retail customers, therefore they assert to classify customers by SIC code is an unreasonable burden. Energy Commission Staff disagree with this assessment.[13] In response to these concerns, however, the Energy

[12] Utilities already provide a list of inter-connected facilities 10 MW and greater to the Energy Commission each year. This becomes the "universe" of self-generation facilities that are expected to provide data directly to the Energy Commission.

[13] Staff cannot explain why this position is put forward when SIC coded data on electricity and natural gas consumption has been one of the most popular requests for data from the QFER system from the public. Energy Commission Staff has responded to hundreds of requests for estimates of consumption specifically targeted to various economic classifications of activity. [See Staff's October 2, 1997 paper, pp. 9-11.] We

Commission Staff have organized a project with EDD to be able to explore whether it is cost-effective to relieve retailers (ESPs, UDCs, gas marketers, CTAs, and gas utilities) of some portion of the SIC code classification "burden" by using the code assigned by EDD.[14] This project is in the developmental stages and will not have definitive answers to cost-effectiveness and feasibility for at least a year.

2. Revenue

At the July 9, 1998, OIR workshop, ESP representatives objected to the concept of reporting revenue to the Energy Commission as an element of consumption data reporting requirements. Two specific objections were voiced.

First, ESP revenues may be very difficult to disentangle into energy services and other services for those firms selling multiple products to the customer under joint marketing practices. For example, energy commodity services may be sold in conjunction with equipment sales that would reduce net energy purchases. Monthly payments by the customer include both commodity energy payments as well as repayment of capital and installation costs for equipment that has been installed.

Second, revenues in the aggregate provide a description of the size of a firm, and in combination with other information, might be used to estimate cash flow, profitability, etc. For a privately held firm, Energy Commission revenue reporting requirements might be the only source of such information; therefore, the information reported to the Energy Commission, if leaked to the financial markets, could influence stock offerings and general perceptions of the firm.

3. Prices and Other Terms and Conditions for Product Offerings

An alternative to retailer reporting of revenue to the Energy Commission as part of consumption reporting requirements, representatives of ESPs have suggested that publicly available prices are an alternative. PUC Section 394.5 does require that registered ESPs post prices and other items and conditions of their products. It is unclear how accurate these postings will be through time. There is also the difficulty that non-registered ESPs serving the larger commercial and industrial market segments have no price/terms and conditions posting requirements. There is no publicly available access to prices for these customers which Energy Commission Staff knows.

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understand these to frequently be associated with market assessment projects. Since ESPs have used utility SIC-coded data as well as that provided by the Energy Commission, it seems reasonable that ESPs themselves would use SIC classifications of their own customers to understand how current customers fit into various market niches.

[14] Staff conducted a workshop with utilities and EDD in February 1998 to explore these issues. As a result of this workshop, Energy Commission Staff are pursuing the acquisition of EDD data as a "pilot" test of the address matching inherent in this effort.

This approach has been used for bypass natural gas sales since the QFER regulations and the associated QFER Forms and Instructions were last modified in 1990. Staff believes that the poor quality and coarse nature of the natural gas prices that have been publicly available have been a material detriment to our ability to perform price elasticity assessments and to predict natural gas usage costs for some segments of the natural gas consumers.

Poorly maintained public posting and absence of public posting for large customers implies that the only means to acquire knowledge of specific prices offered to customers is either Energy Commission mandatory revenue reporting requirements on retailers, or Energy Commission surveys of end-use customers.

4. Energy Commission Access to Individual Retail Customer Data

As noted in Section III.A, one option within universal mandated reporting is retailer and/or UDC/utility reporting of individual customer consumption for its entire customer population. Energy Commission Staff outlined this as a proposed reporting requirement in its October 2, 1997 paper, essentially as a means of developing a comprehensive sampling frame for Energy Commission-initiated customer surveys. Clearly there are major privacy issues associated with the Energy Commission acquisition of individual customer data. Staff believes these concerns are resolved as a result of the confidentiality regulations revised by the Energy Commission and recently approved by Office of Administrative Law.[15]

Beyond the concerns of confidentiality, though, are several practical concerns of handling more than ten million customer records. Energy Commission Staff data processing capabilities would have to be substantially enhanced to allow for the processing and storage implied by these volumes of data. One of the rationales for this approach is to permit use of EDD SIC codes for individual ESP customers, without the need for the retailer to match its customers with EDD records. This variant in the use of EDD SIC codes might be required if EDD would be willing to release its individual business records to the Energy Commission, as a sister government agency under confidentiality protection, but not to permit their release to retailers and UDCs . While the Energy Commission has developed some expertise in name and address matching through similar work with Department of Motor Vehicle registration data for transportation assessment purposes, it is clear that the challenges are substantial.

[15] CCR, Title 20, Article 2, Section 2501 - 2510. Section 2505(a)(5)(B)(i) automatically designates any individual customer information as confidential without the need for an application by the submitting entity to the Executive Director for this treatment.

5. CPUC De-Funding of UDC Data Collection Activities

In the decisions implementing the energy efficiency surcharge, the scope of funding transferred to the oversight of the California Board for Energy Efficiency (CBEE) included a series of activities that were once funded under utility demandside management (DSM) budgets, but which served various other applications beyond DSM program planning, operations, and evaluation. Among these are: (1) SIC coding, (2) demand forecast research, (3) end-use customer surveys, (4) load research, and (5) other customer and/or market research efforts.

For those activities which Energy Commission regulations continue to impose obligations upon the UDCs, Energy Commission Staff are concerned that UDCs may have not identified other funding sources within authorized revenues, or from other sources.[16] We have not seen evidence that redirection have been sought even though it might be logical to presume that UDCs are seeking additional funds from the CPUC to satisfy Energy Commission regulation data collection and reporting requirements. In fact, we know of a few instances in which UDCs have informed Energy Commission Staff that the UDC is terminating certain projects even though they are required by the Energy Commission's Utility Data Plan requirements. If the Energy Commission were to reduce its reporting requirements for UDCs then there would be fewer such redirections or searches for supplemental funding that would be required. In the mean time, the Energy Commission Staff believe that UDCs have begun the process of halting projects required to fully satisfy all Energy Commission reporting requirements.

6. Energy Commission Resources Available for Data Collection/Processing

Energy Commission Staff have frequently suggested that a consequence of restructuring is the necessity for the Energy Commission itself to fund various portions of the total data collection effort required for the scope of activities required to support industry monitoring and policy support and assessment functions. In September 1997, the Energy Commission submitted a funding increase request for FY 98/99, but this was rejected by the control agencies overseeing the state's budget development process. Historic (and current FY 98/99) budgets do not provide funding to implement more than a trivial portion of Energy Commission data needs. Energy Commission Staff are pursuing two avenues to resolve this difficulty.

First, Energy Commission Staff have once again authored an increased funding request for FY 1999/2000 to be submitted through the Energy Commission and control agency

[16] Energy Commission Staff proposed to the CBEE in August 1997 that UDC survey and load research budgets be continued in 1998 according to previous funding levels to permit continuation of necessary activities and to permit time for CBEE and the two regulatory agencies to resolve these various defunding issues. CBEE agreed with this proposal and allocated funds for these purposes to be used by the three UDCs.

processes necessary for the development of the State's FY 1999/2000 budget. These efforts will be more successful if entities that benefit from Energy Commission funding of these data collection activities provide support for these funding augmentation requests.

Second, Energy Commission Staff have submitted a funding request to CBEE to acquire funds from the energy efficiency surcharge to permit end-use customer surveys, end-use load research, and some limited energy efficiency technology assessment projections. Energy Commission Staff are hopeful that an appropriate arrangement in the interests of the energy consuming public and market participants can be developed and put in place quickly.

7. Energy Commission Confidentiality Safeguards

Some parties have expressed concern that the Public Records Act makes such a strong presumption of access to data and information, that the Energy Commission will be unable to withstand a determined challenge to its confidential protection of data despite its active efforts to do so. These parties believe that a statutory basis for confidentiality treatment is necessary, as is already the case with certain petroleum industry data reported to the Energy Commission. The Energy Commission Staff are willing to have a statutory basis for confidentiality protections for some electric and natural gas industry data.

8. Direct Gas Purchases by End-Use Customers from Producers

Much of the discussion of this paper presumes that there is a retailer in between the end-use customer and the producer. In the natural gas industry there now appear to be sales from gas producers directly to major end-use customers without any middleman, except for the gas transmission and distribution function. This would appear to challenge the paradigm put forward by the Energy Commission Staff in much of this paper, because there is no retailer providing this service while there continues to be a LDC (or other entity) performing the distribution function.

At this time Energy Commission Staff believe there are two options. First, such instances could be covered by a requirement that end-users self-providing their own electricity or natural gas be required to provide usage data directly to the Energy Commission. Alternatively, such end-users could be identified by transmission pipelines and reported in aggregates by SIC codes to the Energy Commission.

9. UDC Efforts to Develop Load Profiles

The three UDCs are now undertaking major efforts to develop load profiles according to the requirements established by the CPUC in D.97-10-074. With dynamic load profiles now required for all major customer sectors (except for some of SCE's larger customer

tariffs), the UDC load research staffs have a very large, continuous data production responsibility. The data used to satisfy CPUC requirements is very similar to the data required to satisfy Energy Commission customer sector monthly typical day load requirements.

Energy Commission Staff believe that a new compliance option for UDC satisfaction of Energy Commission customer sector load research requirements can be developed that permits UDCs to provide: (1) the underlying, cleaned individual load data, and (2) customer population counts needed to weight the data into economically defined customer sectors. This would permit the Energy Commission Staff to develop the final customer sector load shapes according to any desired aggregates needed to satisfy Energy Commission analytic efforts, while reducing UDC data processing requirements that may not serve any other purpose given new UDC responsibilities.

10. Practical Issues of Retailer-Based Data Collection

There are several issues associated with the migration to retailer-based data collection reporting requirements. Two important ones are: (1) identification of responsible entities, and (2) enforcement and compliance.

Identification of Responsible Entities. Given fee entry (or reasonably free entry) into the retailing portions of the electricity market, the Cec will periodically encounter new firms that have to be "educated" about Energy Commission data collection and reporting requirements. This is already true for some other agencies, such as the state Board of Equalization, whose statutory provisions have automatically encompassed retailers. Monitoring of the industry and educational sessions are needed in order to ensure that all responsible entities are providing the information required.

Enforcement and Compliance. Retailer-based data collection and reporting requirements may require the Energy Commission to acquire compliance monitoring and enforcement tools to ensure that regulatory mandates are complied with. The Warren-Alquist Act does contain compliance tools for the petroleum industry data reporting requirements, which were less necessary for the electric and natural gas industries when all consumer data was handled by regulated utilities.

V. SUMMARY OF STAFF RECOMMENDATIONS

In this section, Staff suggests a process whereby the data requirements discussed in Section II, the general alternative methods for data collection discussed in Section III, and the specific issues and concerns discussed in Section IV can be resolved. In Section V.B we provide a brief summary of the vision we have for the outcome of this process.

A. Next Steps

The Committee's Scoping Order of July 28, 1998, outlines several workshops for discussion of demand data collection issues, beginning with September 29 and continuing through December 1. Staff suggests the following specific issues be resolved at these workshops, so that a comprehensive package of proposed regulations can be developed for discussion at the mid-January 1999 workshop.

1. Review Alternative Data Collection Methods

The October 15 workshop announced for review of alternative data collection methods should review all of the techniques that are realistic and feasible for satisfying Energy Commission consumer data needs, and conclude with a preferred method for each category of data. This will set the stage for more in-depth discussion of narrower issues at later workshops.

For example, if parties can agree that UDCs should be relieved of the obligation to prepare and submit estimates of small self-generation electricity production/consumption and that a combination of self-reporting by large facilities and Energy Commission-sponsored surveys of smaller facilities is the preferred approach, then specific focus on this option is likely to resolve or narrow the implementation issues.

2. In-depth Examination of Self-Generation

As noted above, self-generation is a specific issue that must be resolved. Energy Commission Staff support substantial changes from the current requirements. UDCs are likely to have to continue to play a role, however a smaller one than in the past, by providing a database of all interconnected generators to the Energy Commission. Some coordination with the powerplant characteristics elements of the Energy Commission regulations will also be needed. Because this issue is already well understood, Energy Commission Staff believe it can be discussed at the September 29 workshop.

3. In-depth Review of Load Research Responsibilities

There are at least three distinct elements to load research that have been conducted by utilities in the past. All of these continue to be valid research/data development activities,

but their are important issues about which entity ought to be responsible to collect them. They are: (1) system load data, (2) hourly load shapes by customer class/economic sector, and (3) end-use load shapes. Staff recommends that the Committee workshop on November 17 attempt to resolve the entity responsible for each of these, or other, categories of data. Subsequent efforts can refine the specific nature of new requirements compared to existing ones.

4. Resolution of the Potential for CBEE Funding of Some Activities

Eighteen months has transpired since the initial efforts of the Energy Efficiency Working Group attempted to address the issue of DSM-funded measurement and evaluation activities. Throughout this period, the issue of Energy Commission-imposed data collection requirements and CPUC-authorized measurement and evaluation program funding has been noted several times, but never resolved. The Energy Commission Staff is currently involved in discussions with CBEE representatives to attempt to obtain CBEE's endorsement of a funding level and a data access arrangement that supports mutual needs. Even if the Energy Commission is successful in these discussions with CBEE, ultimately, the CPUC must approve any CBEE recommendation. Any favorable CBEE recommendation to the CPUC will be more successful if entities that benefit from CBEE funding of these data collection activities provide support for a CBEE funding request.

B. Preferred Methods to Achieve Information Needs

It will be no surprise to participating parties that Staff have some preferences for the resolution of these issues. These have been communicated openly throughout this proceeding. Staff has been willing to hear objections and attempt to find methods to resolve concerns. We continue to operate in this mode. In the balance of this paper we provide a brief summary of the vision we have for the outcome of this process.

1. Mandated Reporting Requirements

Consumption Reporting Requirements. Staff believes that retailers ought to be required to provide consumption data about their electricity and natural gas customers to the Energy Commission. Correspondingly, UDCs ought to be relieved of this responsibility for these electricity direct access and natural gas core aggregation customers.

At least until the transference of EDD SIC codes to retailers is demonstrated to be both technically feasible and cost-effective, retailers ought to be required to classify customers by SIC code. During this transition, UDCs should be required to transfer existing SIC code information about their customers to competitive retailers, which will minimize the actual coding of customers that new retailerss have to perform. Also during this

transition, any customers signing up directly with an competitive retailer as new construction or new accounts representing new business, without ever having been a UDC energy service customer, ought to be classified by their ESP or gas marketer.

It is unclear whether those reporting energy usage should also be required to provide revenue data for each customer aggregate that they report, or average prices specific to each aggregate, or no financial information at all. We need to learn more at the workshops about the technical issues of segmenting energy revenues from other revenues received from the customer, and why Energy Commission confidentiality regulations do not provide sufficient protection for these data if parties believe they are trade secrets.

System and Customer Class Load Research. UDCs ought to be required to continue to provide system hourly loads and customer class hourly loads to the Energy Commission. Properly documented, cleaned data for use in preparing CPUC-approved dynamic load profiles is an acceptable compliance option to satisfy these requirements.

Self-Generation. Self-generation facilities greater than 1 MW ought to be required to report production and onsite consumption directly to the Energy Commission. Utilities should be required to annually provide a database of all interconnected generators which the Energy Commission Staff can use as a population for ensuring self reporting and contacting smaller facilities.

Natural Gas Producers and Marketers. Staff believes that users of self-produced/consumed natural gas should be required to provide estimates of production/consumption directly to the Energy Commission. Anyone marketing natural gas directly to an end-user ought to report these transactions in aggregated form using SIC code groupings.

2. <u>Non-Mandated Data Collection</u>

Substantial portions of current mandates on UDCs to collect survey and end-use load research data should be eliminated. These can be replaced by Energy Commission-sponsored data collection projects.

Energy Commission-Sponsored Data Collection. Those data of interest to the Energy Commission and not associated with the responsibilities of any other entity in the industry should be collected directly by the Energy Commission. The scope of these items is a function of the desire of Energy Commission management and the budget process of state government.

Cooperative Arrangements. Some data of interest to the Energy Commission and other entities can be collected through cooperative arrangements of the interested parties. The Energy Commission Staff hope for a long-term, Energy Commission designated data

collection funding arrangement with CBEE. In our current discussions, the Energy Commission becomes the contracting agent to design projects and procure services of qualified vendors using CBEE-originated funds. CBEE gets access to the resulting data and perhaps some assessment services of the Energy Commission as spelled out in the final documents between Energy Commission/CBEE/CPUC.

C. Other Data Reporting Requirements That Should be Eliminated

Staff believes that substantial portions of current data reporting requirements can be eliminated and streamlined.

1. Reporting Requirements to Be Eliminated

Staff believes that QFER projections should be eliminated. We know of no purpose to which these data are being put. Staff believes that CFM reporting requirements for UDCs should be eliminated, but not for utilities that retain an obligation to serve.

Staff believes that UDCs can be relieved of responsibility to prepare estimates of aggregate self-generation for facilities below 10 MW.

Staff believes that substantial portions of the surveys now required under Title 20, Article 2, Section 1344 can be eliminated.

Staff believes that the demand forecast and DSM information submitted pursuant to the CFM regulations for the Electricity Report can be eliminated, at least for those utilities who no longer have an obligation to serve.

2. Reporting Requirements to Be Streamlined

Staff believes that QFER reporting requirements can be streamlined considerably. A single electronic filing in a modern relational database linking the necessary variables should be sufficient for Energy Commission purposes and should reduce the reporting requirement burden on utilities, UDCs, ESPs, and gas marketers.

Staff believes that load research data can be provided at far lower cost for the three UDCs by merely submitting the cleaned data base used to construct CPUC-approved load profiles along with necessary population counts and stratification information to permit Energy Commission staff to develop its own aggregates.